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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,952	01/16/2004	Bruce R. Ferguson	MSEMI.084A	6180

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KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

PIGGUSH, AARON C

ART UNIT	PAPER NUMBER
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2838

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/758,952

Applicant(s)

FERGUSON, BRUCE R.

Examiner

Aaron Piggush

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12 April 2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it contains the title of the invention.

The heading of the abstract should only read "Abstract" or "Abstract of the Disclosure".

Correction is required. See MPEP § 608.01(b).

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Battery Charging and Discharging by Use of a Bi-Directional Transistor.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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4. Claims 23-25 and 27-29 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9-14 of copending Application No. 10/760126 in view of Faberman (US 5,978,236).

Claims 9 and 10 of application 10/760126 disclose all of the limitations of claims 23 and 24 of the instant application, except wherein application 10/760126 does not specify that the “transistor” is a bi-directional transistor.

Faberman discloses wherein a bi-directional transistor is used for charging/discharging a battery, as further noted below in the 35 U.S.C. 103 rejections, in order to allow the charging current to be controlled in either direction.

Furthermore, the step of “sensing” the supply current as mentioned in claim 24 of the instant application is reasonably met by claim 9 of application 10/760126 because, in order for the charging current to be linearly adjusted to prevent a supply current from exceeding a predefined threshold, it must be sensed by some circuitry. However, Faberman also discloses sensing circuitry (col 7 ln 65 to col 8 ln 41).

Additionally, it was well known to one of ordinary skill in the art at the time of the invention that a bi-directional transistor could be easily formed by using two separate, standard transistors (e.g. MOSFETs, BJTs, diodes).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a bi-directional transistor as the transistor in application 10/760126, as did Faberman, so that the current could be more effectively and efficiently controlled in either direction for charging/discharging a battery.

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Additionally, claims 11, 12, 13, and 14 of application 10/760126 claim all of the limitations of claims 25, 27, 28, and 29, of the instant application, respectively.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faberman (US 5,978,236) in view of Krall (US 5,621,299).

With respect to claims 23 and 24, Faberman discloses a method for controlling battery power comprising the acts of: selectively providing a first external power source to a device coupled to a system power terminal ("AC power in" in Fig. 5); coupling an internal battery to the system power terminal via series-connected bi-directional transistor (charge switch in Fig. 5 made up of no. D4F and S1F); charging the internal battery by regulating the bi-directional transistor to conduct a charging current in a first direction from the system power terminal to a positive battery terminal during a charging mode (col 12 ln 7-22); discharging the internal battery by regulating the bi-directional transistor to conduct a discharging current in a second direction from the positive battery terminal to the system power terminal during a discharging mode (col 12 ln 18-35); and linearly adjusting the charging current to limit the supply current (col 7 ln 65 to col 8 ln 41).

However, Faberman does not expressly disclose selectively providing a first or a second external power source to a device (i.e. wherein this is interpreted to mean that there are two separate external power sources which can be switched between), sensing a supply current from the second external power source, or adjusting the charging current to prevent a supply current from exceeding a predefined threshold.

Krall discloses selectively providing a first or a second external power source to a device (no. 27 and 29 in Fig. 1, including switches no. 14 and 16), sensing a supply current from the second external power source (no. 47 in Fig. 1, all components of Fig. 5, and col 6 ln 33-67), and adjusting the charging current to prevent a supply current from exceeding a predefined threshold (no. 47 in Fig. 1, all components of Fig. 5, and col 6 ln 33-67), in order to prevent damage to the wiring or the batteries resulting from too great of a current or the heat generated therefrom.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide a selectable first or second external power source, sense a supply current from the power source, and adjust the charging current to keep it from exceeding a predefined threshold in the device of Faberman, as did the device of Krall, so that the batteries and wiring would not be damaged from too great of a current.

With respect to claim 25, Faberman discloses wherein the impedance of the bi-directional transistor varies to limit the level of the charging current or the discharging current (col 7 ln 65 to col 8 ln 41 and col 12 ln 7-35). As the switch is turned on and off, the amount of charging current is limited to a certain amount. Furthermore, when the switch is off, its impedance is so high that current cannot flow through, and when it is on, the impedance is lowered so that a current may flow.

With respect to claim 26, Faberman discloses wherein the impedance of the bi-directional transistor varies inversely with the discharging current level during the discharging mode (col 8 ln 1-25 and col 17 ln 5-30). Additionally, and as noted previously, since the charging/discharging current is limited by controlling the duty cycle for the transistor, the average impedance for the transistor would increase due to the transistor being turned off and in a state of non-conductance more often when the current was increasing and approaching the limited level (i.e. the duty cycle would be lowered to reduce the average charging current).

With respect to claim 27, Faberman discloses wherein the charging mode occurs when the voltage on the system power terminal is greater than the voltage of the internal battery (col 3 ln 42-60 and col 5 ln 5-25). This is further understood because when the AC power of the system is functioning correctly and supplying power to the system, it is used to charge the battery. Additionally, when there are two DC voltage sources (e.g. the battery and the rectified input power from the AC source), current flows from the source of the higher potential to the source of the lower potential, as is well-known to one of ordinary skill in the art.

With respect to claim 28, Faberman discloses wherein the discharging mode occurs when the voltage on the system power terminal is less than the voltage of the internal battery (col 3 ln 42-60 and col 5 ln 5-25). This is further understood because when the AC power of the system is functioning incorrectly or is turned off and not supplying power to the device, the battery must be used to power the system. Additionally, when there are two DC voltage sources (e.g. the battery and the rectified input power from the AC source), current flows from the source of the higher potential to the source of the lower potential, as is well-known to one of ordinary skill in the art.

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With respect to claim 29, Faberman discloses wherein the discharging mode occurs in response to a discharge command (col 3 ln 42-60 and col 19 ln 1-34). When the main power supply (i.e. AC power in) is lost by a power outage or other type of unintentional failure, there is an automatic command wherein the battery will supply power to the device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is 571-272-5978. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AP


KARL EASTHOM
SUPERVISORY PATENT EXAMINER